Electricity and Magnetism

Notes

http://www.brainpop.com/science/motionsforcesandtime/magnetism/preview.weml

Magnetism	a force of attraction or repulsion by magnetic materials
Magnet	an object that pulls some metals to itself

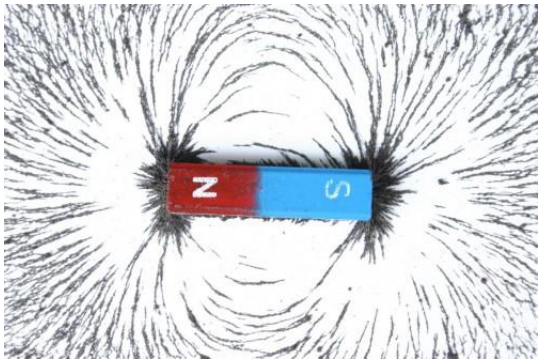
Materials attracted to magnets	•iron •nickel •cobalt •steel (made mostly of iron)
Materials NOT attracted to magnets	•wood •copper •aluminum •plastic •glass

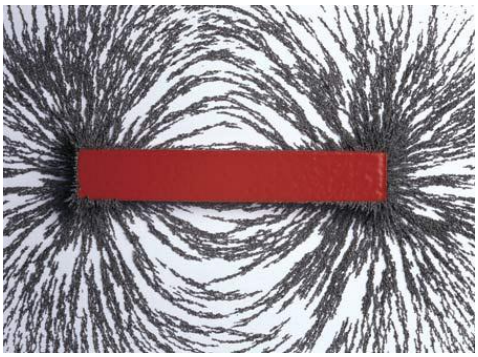
Magnetic field — the area affected by a magnet

It surrounds a magnet

Magnetic poles — each end of a magnet

This is where the magnetic field is the strongest





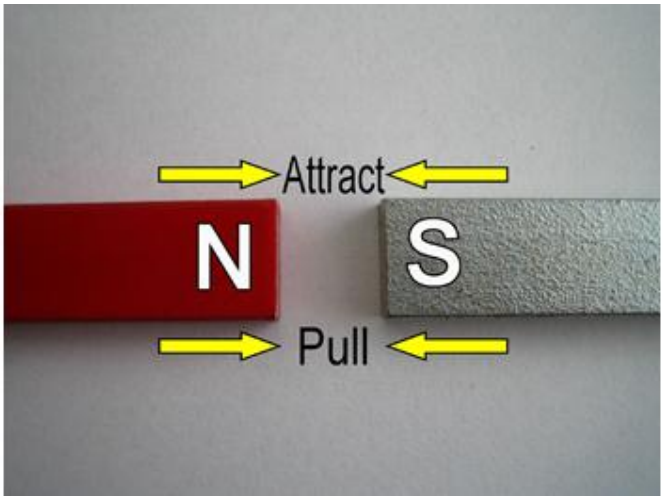
Two magnetic poles

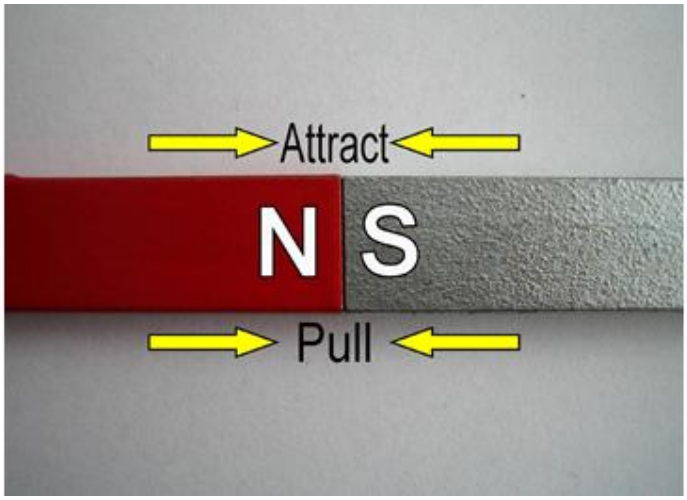
- north pole
- south pole

Both poles attract other metals

North pole will attract south pole of another magnet

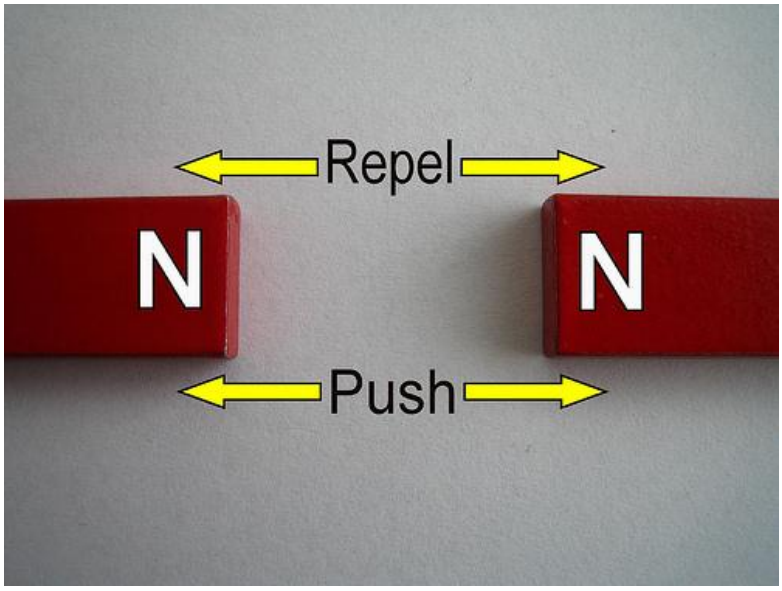
South pole will attract north pole of another magnet





http://www.absorblearning.com/media/item.action?quick=76

North poles repel each other;
south poles repel each other



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Uses of magnets	•telephones •doorbells •stereo speakers •electric motors •alarm systems
Electric charge	electricity that is held or carried by something It is caused by electrons moving between atoms

http://www.brainpop.com/science/energy/electricity/preview.weml

Static electricity	electricity that collects on objects and doesn't flow It can only jump from place to place Static electricity can be produced when different materials rub against each other

http://www.brainpop.com/science/energy/staticelectricity/preview.weml

http://www.absorblearning.com/media/item.action?quick=6c

Electric current — a charge that flows along a circuit

Circuit — a path electricity can follow

http://www.brainpop.com/technology/energytechnology/electriccircuits/preview.weml

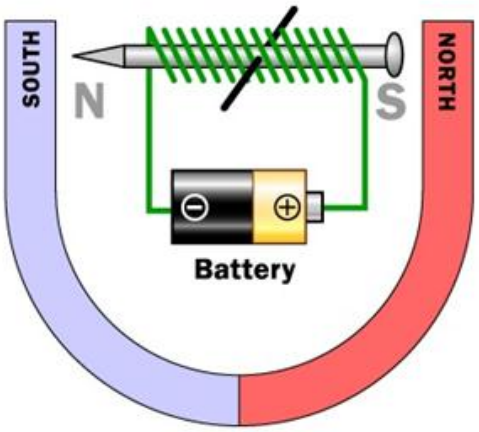
Conductor — a material that can carry electricity

Circuits are created by conductors

Examples of conductors
- copper wire
- iron
- gold
- water

Electric generator — a machine with metal wires spinning inside an electric field that makes electricity

Electromagnet — a metal bar with a wire around it that creates a magnetic field when an electric current moves through the wire



http://www.brainpop.com/technology/energytechnology/electromagnets/preview.weml

Electricity and Magnetism
Check Your Understanding

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1. What caused the cat's fur to stand up?

_____ caused the cat's fur to stand up.

2. How does the electric generator make electricity?

The electric generator makes electricity when _____ .

3. What is a magnet?

A magnet is _____ .

4. What will happen if the person stops turning the handle on the electric generator?	*If the person stops turning the handle on the electric generator, it will _____ .*

Two basic kinds of electricity	•static electricity •current electricity
Current electricity	electricity that moves along a path It requires an energy source

http://www.brainpop.com/technology/energytechnology/currentelectricity/preview.weml

Energy source	something that provides energy It produces a flow of electrons called an *electric current*
Examples of energy sources	•water •coal •natural gas •sunlight •battery •electric generator

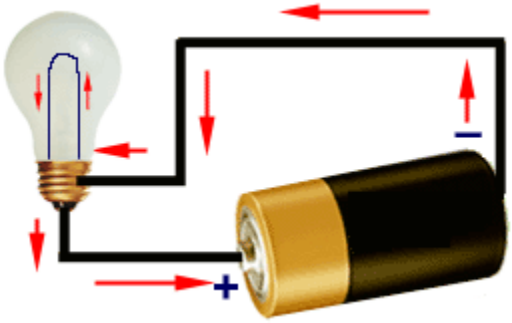
Battery — a small object that provides power for electrical items

http://www.brainpop.com/technology/energytechnology/batteries/preview.weml

Example of a circuit — in a flashlight, a battery is connected to a wire

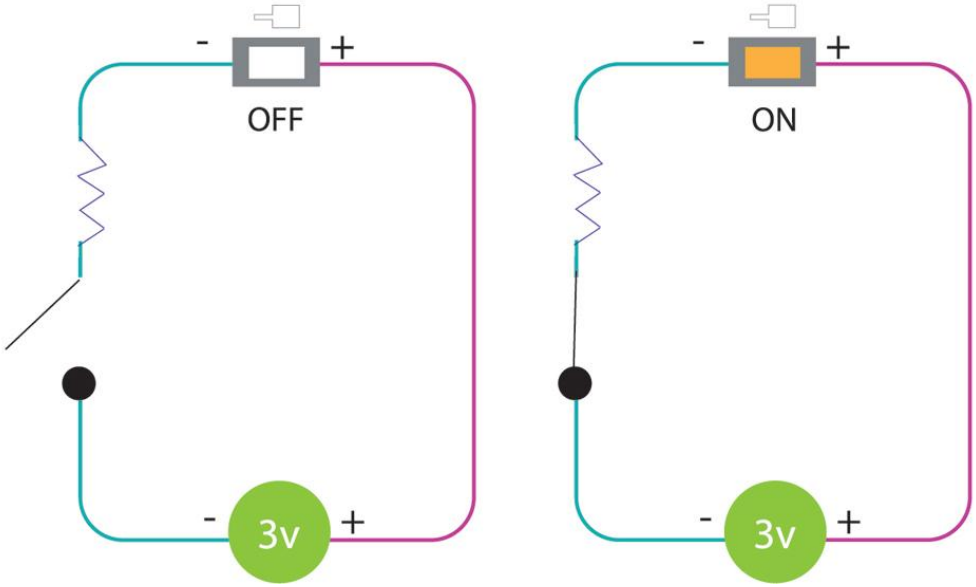
Another wire goes from the lightbulb back to the battery, forming a path

Electrons flow along this path from the battery to the bulb and back



Opening in the circuit — stops the current from moving along the path

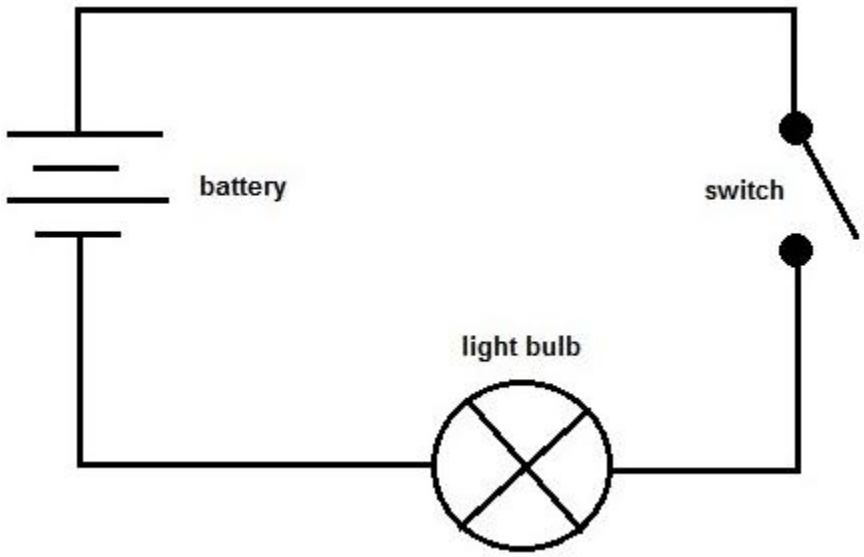
Switch — a device that opens and closes a circuit



http://www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/electricity/circuitsrev4.shtml

http://www.members.shaw.ca/len92/current_animation.gif

Circuit diagram — a diagram that uses symbols to show the parts of an electrical circuit



Electricity and Magnetism

Science Skill

Reading a Circuit Diagram

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1. What is the straight line that joins the battery symbol and the lightbulb symbol?

The straight line that joins the battery symbol and the lightbulb symbol is the _____ .

2. What does the symbol that looks like a door that opens and closes stand for?

The symbol that looks like a door that opens and closes stands for a _____ .

Insulator	material that does not allow electricity to flow easily through it
Examples of insulators	•plastic •glass •wood •rubber •air

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Check Your Understanding
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1. When an object gains electrons, what charge does it have?

When an object gains electrons, it has a _____ charge.

2. What parts make up the circuit in a flashlight?

The parts that make up the circuit in a flashlight are the _____ , _____ , and _____ .

3. What is an insulator?

An insulator is _____ .

4. Name two conductors and two insulators.

Two conductors are _____ and _____ .
Two insulators are _____ and _____ .